



FIRE RESCUE

ALBEMARLE COUNTY

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FITNESS ASSESSMENT PROTOCOL WORKSHEET

Name: _____ Date: _____

Resting Heart Rate: I. _____ II. _____ III. _____

Resting Blood Pressure: I. _____ II. _____ III. _____

Weight: _____ kg Target Exercise Heart Rate (85% MHR): _____

IF THE CLIENT EXPERIENCES CHEST PAIN, LIGHT-HEADEDNESS, ATAXIA, CONFUSION, NAUSEA, OR CLAMMINESS AT ANY TIME DURING ANY EVALUATION, TERMINATE THE ASSESSMENT IMMEDIATELY.

1 AEROBIC CAPACITY

Gerkin Protocol

- Fit heart rate monitor to client, and provide client with towel.
- Uniformed personnel's heart rate is monitored continuously throughout the evaluation and during the cool-down period. Heart rate is obtained during the final 15 seconds of each stage and recorded.
- Once the client's heart rate exceeds the target exercise heart rate, the client continues the evaluation for an additional 15 seconds at the stage where the target exercise heart rate was exceeded.
- The evaluation is completed and the final evaluation stage is reported if the heart rate does not return to, or below, the target exercise heart rate or the client reaches stage 11.4.
- The VO₂ Max is determined by using the obtained final evaluation stage and the conversion chart.
- Record the heart rate after one minute of cool-down.

STAGE	MINUTE	SPEED (MPH)	GRADE (%)	HEART RATE <small>(last 15 seconds of stage)</small>
Warm-Up	3 Minutes	3.0	0	
1	1	4.5	0%	
2	2	4.5	2%	
3	3	5.0	2%	
4	4	5.0	4%	
5	5	5.5	4%	
6	6	5.5	6%	
7	7	6.0	6%	
8	8	6.0	8%	
9	9	6.5	8%	
10	10	6.5	10%	
11	11	7.0	10%	
Cool-Down	1 Minute	3.0	0	

STAGE	TIME	CONVERTED VO ₂ max
1	1:00	31.15
2.1	1:15	32.55
2.2	1:30	33.6
2.3	1:45	34.65
2.4	2:00	35.35
3.1	2:15	37.45
3.2	2:30	39.55
3.3	2:45	41.30
3.4	3:00	43.4
4.1	3:15	44.1
4.2	3:30	45.15
4.3	3:45	46.2
4.4	4:00	46.5
5.1	4:15	48.6
5.2	4:30	50
5.3	4:45	51.4
5.4	5:00	52.8
6.1	5:15	53.9
6.2	5:30	54.9
6.3	5:45	56
6.4	6:00	57
7.1	6:15	57.7
7.2	6:30	58.8
7.3	6:45	60.2
7.4	7:00	61.2
8.1	7:15	62.3
8.2	7:30	63.3
8.3	7:45	64
8.4	8:00	65
9.1	8:15	66.5
9.2	8:30	68.2
9.3	8:45	69
9.4	9:00	70.7
10.1	9:15	72.1
10.2	9:30	73.1
10.3	9:45	73.8
10.4	10:00	74.9
11.1	10:15	76.3
11.2	10:30	77.7
11.3	10:45	79.1
11.4	11:00	80

Stage Completed:	
Converted VO₂ Max:	ml/kg/min (from chart)
Time Evaluation Terminated:	
Reason for Termination:	

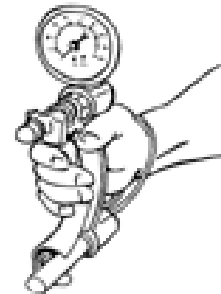
" We will provide the highest quality services to protect and preserve the lives, property, and environment of our community."

2 MUSCULAR STRENGTH

Grip-Strength

- Provide client with instructions and towel.
- The hand grip strength evaluation uses the Jamar Hydraulic Hand Dynamometer and is a series of six (6) measurements – three (3) for each hand.
- The isometric contraction (squeezing) required during this evaluation must be eased into and then released slowly, without swinging the arm, pumping the arm, or jerking the hand.
- Make sure the client's hands are dry, and place the dynamometer in the hand to be evaluated.
- Adjust the dynamometer, ensuring that the bottom of the handle clip is adjusted to fit snug in the first proximal interphalangeal joint.
- Rotate the red peak-hold needle counterclockwise to the "0" position.
- Instruct the client to bend slightly forward with the elbow bent at a 90-degree angle, shoulder adducted and neutrally rotated, forearm and wrist in a neutral position.
- Instruct the client to squeeze with maximum strength for two (2) to three (3) seconds while exhaling then slowly release grip. The peak-hold needle will automatically record the highest force exerted.
- Record the reading to the nearest kilogram. Measure both hands alternatively allowing three (3) evaluations per hand, resetting the peak-hold needle to "0" each time.
- Record the highest score.

Dominant Hand:	<input type="checkbox"/> Left	<input type="checkbox"/> Right
	LEFT HAND	RIGHT HAND
Trial I	kg	kg
Trial II	kg	kg
Trial III	kg	kg



Highest Grip Strength: _____ kg

Reason for Termination: _____

MUSCULAR STRENGTH

Leg Strength

- Provide client with instructions and towel.
- The leg strength evaluation uses the Jackson Strength Evaluation System with V-Grip Handlebar (chinning triangle) and is a series of three (3) measurements.
- The isometric leg extension required during this evaluation must be eased into and then released slowly, without bending back, swinging arm, pumping or bending arm, or jerking hand.
- Make sure the client's hands are dry, and have the client stand on the dynamometer base plate which has been placed on a level and secure surface, with feet spread shoulder-width apart.
- Instruct the client to stand erect.
- Adjust the chain, ensuring that the upper (inside) edge of the bottom cross member of the V-grip handlebar is at the top of the individual's knee cap. Ensure the chain is taut.
- Instruct the client to hold the bar, look straight with head in the neutral position, fully extend the arms, and maintain a straight back. Ensure the client's hips are directly over their feet, with trunk and knees slightly bent.
- Instruct the client to lift using their legs for a total of three (3) seconds while exhaling then slowly relax the arms and legs. Have the client remain at a standing rest for thirty (30) seconds.
- Record the digital reading to the nearest kilogram.
- Conduct a total of three (3) trials, recording the highest score.

Trial I	kg
Trial II	kg
Trial III	kg



Highest Leg Strength: _____ kg

Reason for Termination: _____

MUSCULAR STRENGTH

Arm Strength

- Provide client with instructions and towel.
- The arm strength evaluation uses the Jackson Strength Evaluation System with Straight Handlebar and is a series of three (3) measurements.
- The isometric arm contraction required during this evaluation must be eased into and then released slowly, without swinging arm, pumping arm, or jerking hands.
- Make sure the client's hands are dry, and have the client stand on the dynamometer base plate which has been placed on a level and secure surface, with feet spread shoulder-width apart.
- Instruct the client to stand erect without arching of the back, and hold the bar with a wide grip, bending his/her elbows 90-degrees (keeping elbows at side).
- Adjust the chain, ensuring the chain is taut and the arm/elbow joint is at 90-degrees.
- Instruct the client to not shrug shoulders, bend back, or perform any motion other than to contract the arms and attempt to move the bar in a vertical direction.
- Instruct the client to flex arms for a total of three (3) seconds while exhaling then slowly relax the arms. Have the client remain at a standing rest for thirty (30) seconds.
- Record the digital reading to the nearest kilogram.
- Conduct a total of three (3) trials, recording the highest score.

Trial I	kg
Trial II	kg
Trial III	kg

Highest Arm Strength: _____ kg

Reason for Termination: _____

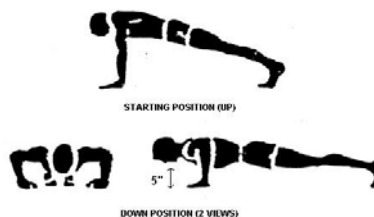


3 MUSCULAR ENDURANCE
Push-Ups

- Prepare five-inch (5") prop, metronome, and stopwatch.
- Provide client with instructions.
- This muscular endurance evaluation uses a series of push-ups performed in a two-minute (2) time period (maximum of 80 push-ups).
- The evaluation is initiated from the "up" position (hands are shoulder-width apart, back is straight, and head is in neutral position). The client is not allowed to have feet against a wall or other stationary item. The back must be straight at all times, and he/she must push up to a straight arm position.
- Instruct the client to continue to perform push-ups in time with the cadence of the metronome (one beat up – one beat down).
- The five-inch prop is placed on the ground beneath the client's chin, and the client must lower the body to the floor until the chin touches this object.
- The metronome is set at a speed of 80, allowing for 40 push-ups per minute.
- The administrator terminates the evaluation when the client:
 - reaches 80 push-ups;
 - performs three (3) consecutive incorrect push-ups; or
 - does not maintain continuous motion with the metronome cadence.
- Record the highest number of successfully completed push-ups.

Number of Successfully Completed Push-Ups: _____

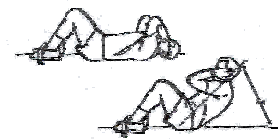
Reason for Termination: _____



MUSCULAR ENDURANCE

Curl-Ups

- Prepare cushioned mat, metronome, and stopwatch.
- Provide client with instructions.
- This muscular endurance evaluation uses a series of curl-ups performed in a three-minute (3) time period (maximum of 90 curl-ups).
- The evaluation is initiated from the supine position with knees bent at a 90-degree angle, hands cupped over the ears or at the temples, and with hand and arm position maintained for the entire duration of the evaluation.
- The individual is advised that his/her feet will be secured by a bar or an individual; however, holding or bracing of the knees or ankles is not allowed.
- Instruct the client to initiate the curl-up by flattening the lower back then actively contracting the abdominal muscles and continuing the movement until the trunk reaches a 45-degree angle to the floor.
- The lower back must contact the mat before the shoulders/upper back. Rocking and/or bouncing movement is not permitted, and the buttocks must remain in contact with the mat at all times.
- Instruct the client to continue to perform curl-ups in time with the cadence of the metronome (one beat up – one beat down).
- The metronome is set at a speed of 60, allowing for 30 curl-ups per minute.
- The administrator shall observe the evaluation from the side to ensure that each curl-up is performed correctly.
- The administrator terminates the evaluation when the client:
 - reaches 90 curl-ups;
 - performs three (3) consecutive incorrect curl-ups; or
 - does not maintain continuous motion with the metronome cadence.
- Record the highest number of successfully completed curl-ups.



Number of Successfully Completed Curl-Ups: _____

Reason for Termination: _____

4 FLEXIBILITY

Sit & Reach

- Prepare equipment.
- Provide client with instructions.
- This flexibility evaluation uses the Novel Acuflex I or equivalent trunk flexibility tester.
- Advise the client that this evaluation is a series of three (3) measurements that will evaluate the flexibility of the lower back, hamstring muscles, and shoulders.
- Instruct the client that the flexion required during this evaluation must be smooth and slow, as the individual advances the slide on the box to the most distal position possible.
- Instruct the client to sit on the floor ensuring the head, upper back, and lower back are in contact with the wall. Place the client's legs together, fully extended. The sit & reach box is placed flat against the feet.
- While maintaining head and upper/lower back contact with the wall, the client is instructed to extend arms fully in front of the body with the right hand overlaying the left hand, with middle finger of each hand directly over each other. The rule is set at 0.0" at the tips of the middle fingers.
- Instruct the client to exhale slowly while stretching slowly forward, bending at the waist and pushing the measuring device with the middle fingers.
- During the stretch, legs are to remain together and fully extended, and hands are to remain overlaid. The stretches are held momentarily and the distance obtained.
- If the client bounces, flexes the knees, or uses momentum to increase distance, the trial is disqualified.
- Instruct the client to relax for thirty (30) seconds. Record the distance to the nearest ¼ inch.
- Conduct a total of three (3) trials, recording the furthest distance.

Trial I	_____ inches
Trial II	_____ inches
Trial III	_____ inches

Furthest Distance: _____ inches

Reason for Termination: _____



5 SKINFOLD MEASUREMENTS

Optional

- All measurements should be made on the right side of the body.
- Take duplicate (2) measurements at each site and retest if duplicate measurements are not within one-to-two (1-2) millimeters. Three (3) measurements are always preferable to ensure accuracy.
- Rotate through measurement sites or allow time for skin to regain normal texture and thickness.
- Remove thumb from caliper handle.
- Hold calipers on fold for two (2) seconds.
- Remind clients that skinfold measurements have a margin of errors of +/- 5-10 percent.

LOCATIONS	
Abdominal	• Vertical Fold
	• 2cm to the right side of the umbilicus
Triceps	• Vertical Fold
	• On the posterior midline of the upper arm halfway between the acromion and the olecranon processes
Pectoral	• Diagonal Fold
	• One-half the distance between the anterior axillary line and the nipple
Suprailiac	• Diagonal Fold
	• In line with the natural angle of the iliac crest taken in the anterior axillary line immediately superior to the iliac crest
Thigh	• Vertical Fold
	• On the anterior midline of the thigh midway between the proximal border of the patella and the greater trochanter of the femur OR at the inguinal crease of the hip

Males:	Chest:				Abdominal:				Thigh:			
Females:	Tricep:				Suprailiac:				Thigh:			
Calculations:	Sum of Skinfolds:				% Body Fat:				Fat Weight:			
									Lean Weight:			

To calculate goal weight:

$$\text{Lean Weight} / \frac{(100 - \text{Goal \%})}{100} = \text{Goal Weight}$$

REMARKS:

Signature: _____ Date: _____

Fitness Trainer (please print): _____

Fitness Trainer Signature: _____

VO₂ Max

Fitness can be measured by the volume of oxygen you can consume while exercising at your maximum capacity. VO₂ max is the maximum amount of oxygen in milliliters one can use in one minute per kilogram of body weight. Those who are more fit have higher VO₂ max values and can exercise more intensely than those who are not as well conditioned. Numerous studies show that you can increase your VO₂ max by working out at an intensity that raises your heart rate to between 65 and 85% of its maximum for at least 20 minutes three to five times a week.

Normative Data for VO₂max

Female (values in ml/kg/min)

Age	Very Poor	Poor	Fair	Good	Excellent	Superior
13-19	<25.0	25.0 - 30.9	31.0 - 34.9	35.0 - 38.9	39.0 - 41.9	>41.9
20-29	<23.6	23.6 - 28.9	29.0 - 32.9	33.0 - 36.9	37.0 - 41.0	>41.0
30-39	<22.8	22.8 - 26.9	27.0 - 31.4	31.5 - 35.6	35.7 - 40.0	>40.0
40-49	<21.0	21.0 - 24.4	24.5 - 28.9	29.0 - 32.8	32.9 - 36.9	>36.9
50-59	<20.2	20.2 - 22.7	22.8 - 26.9	27.0 - 31.4	31.5 - 35.7	>35.7
60+	<17.5	17.5 - 20.1	20.2 - 24.4	24.5 - 30.2	30.3 - 31.4	>31.4

Male (values in ml/kg/min)

Age	Very Poor	Poor	Fair	Good	Excellent	Superior
13-19	<35.0	35.0 - 38.3	38.4 - 45.1	45.2 - 50.9	51.0 - 55.9	>55.9
20-29	<33.0	33.0 - 36.4	36.5 - 42.4	42.5 - 46.4	46.5 - 52.4	>52.4
30-39	<31.5	31.5 - 35.4	35.5 - 40.9	41.0 - 44.9	45.0 - 49.4	>49.4
40-49	<30.2	30.2 - 33.5	33.6 - 38.9	39.0 - 43.7	43.8 - 48.0	>48.0
50-59	<26.1	26.1 - 30.9	31.0 - 35.7	35.8 - 40.9	41.0 - 45.3	>45.3
60+	<20.5	20.5 - 26.0	26.1 - 32.2	32.3 - 36.4	36.5 - 44.2	>44.2

Table Reference: The Physical Fitness Specialist Certification Manual, The Cooper Institute for Aerobics Research, Dallas TX, revised 1997 printed in Advance Fitness Assessment & Exercise Prescription, 3rd Edition, Vivian H. Heyward, 1998.p48